SUMMARY

Title: Effects of minimal dose of resistance training on body composition and running performance in female recreational runners

Objective: The purpose of this study was to analyse the extent to which minimal dose resistance training would elicit improvements in running performance and body composition for female recreational runners.

Methods: Forty-one female recreational runners were randomly assigned to one of three groups (endurance running [V] n=14; combined endurance running and resistance training program once [VR30] n=14 and twice a week [VR60] n=13, respectively). During the 10-week training program, the V group completed 3 hours of continuous endurance running per week; VR30 completed 2 ½ hours of continuous endurance running and 1 x 30 min of resistance training per week, while VR60 group completed 2 hours of continuous endurance running and 2x30 min of resistance training per week. Body composition (FM, FFM, ECM/BCM), standing long jump, running economy, ventilatory anaerobic threshold and maximal endurance performance characteristics were assessed using ANOVA with repeated measures. Body composition was assessed via whole-body bio impedance. Performance parameters were determined during running on a treadmill.

Results: Thirty-one female recreational runners completed 10-week intervention program. Both concurrent training groups significantly improved their time to exhaustion at a given workload on a treadmill VR30 from 168,5 ± 43,2 to 191,3 ± 43,8 s (↑ 13,5%, p = 0,001, d = 0,52), VR60 from 203,1 ± 47,8 to 249,3 ± 49,7 s (↑ 22,7%, p = 0,004 d = 0,95). No significant differences were detected between groups for body composition, power output (standing long jump), running economy, ventilatory anaerobic threshold and $\dot{V}O_2max$. In addition, the VR60 group increased significantly running economy ($\dot{V}O_2$ at 7 $km.h^{-1}$) from 28,1 ± 2,5 $ml.kg^{-1}.min^{-1}$ to 26,8 ± 3,1 $ml.kg^{-1}.min^{-1}$ (↓4,6 %, p= 0,047, d = 0,467) between pre and post measurement.

Conclusion: The findings suggest resistance training in volume 30 min or 1 hour per week was sufficient to increase maximal running performance. The larger resistance training volume was associated with higher improved maximal running performance, however it did not lead to improvement in body composition, running economy, aerobic capacity, ventilatory anaerobic threshold and explosive power.

Key words: recreational running, concurrent training, endurance training, resistance training,